

CLAIMS

1. A data sending/receiving device for issuing a digital certificate to a new data sending/receiving device, when the data sending/receiving device causes the new data sending/receiving device to participate in a network formed by data sending/receiving devices each having a digital certificate that certifies authority to participate in the network; the data sending/receiving device comprising:

a first communication section which performs communication in the network;

a second communication section, to which the new data sending/receiving device can be connected; and

a control section which performs a process of issuing the digital certificate; wherein

when the new data sending/receiving device is connected to the second communication section, the control section judges whether or not the new data sending/receiving device is a device having a communication means that can communicate in the network, in accordance with device type information of the new data sending/receiving device received via the second communication section from the new data sending/receiving device, and

if the new data sending/receiving device is judged as a device having a communication means that can communicate in the network, the control section creates the digital certificate for the new data sending/receiving device by using a device identifier specific to the new data sending/receiving device, the device identifier being received via the second communication section from the new data sending/receiving device, and sends the created digital certificate via the second communication section

to the new data sending/receiving device.

2. The data sending/receiving device according to claim 1, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network, if the new data sending/receiving device already has a digital certificate, the control section does not issue a new digital certificate.

3. The data sending/receiving device according to claim 1, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network and the new data sending/receiving device already has a digital certificate, if the digital certificate that is already held in the new data sending/receiving device is for another network different from the network, the control section creates a digital certificate for the new data sending/receiving device by using the device identifier and sends the created digital certificate to the new data sending/receiving device.

4. A data sending/receiving device for issuing a digital certificate to a new data sending/receiving device, when the data sending/receiving device causes the new data sending/receiving device to participate in a network formed by data sending/receiving devices each having a digital certificate that certifies authority to participate in the network; the data sending/receiving device comprising:

a communication section which performs communication in the network; and

a control section which performs a process of

issuing the digital certificate; wherein

if the new data sending/receiving device is judged as a device having a communication means that can communicate in the network, the control section creates a digital certificate for the new data sending/receiving device by using a device identifier specific to the new data sending/receiving device, the device identifier being received via the data sending/receiving device to which the new data sending/receiving device is connected and via the communication section from the new data sending/receiving device, and controls to send the created digital certificate via the communication section and via the data sending/receiving device to which the new data sending/receiving device is connected.

5. The data sending/receiving device according to claim 4, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network, if the new data sending/receiving device already has a digital certificate, the control section does not issue a new digital certificate.

6. The data sending/receiving device according to claim 4, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network and the new data sending/receiving device already has a digital certificate, if the digital certificate that is already held in the new data sending/receiving device is for another network different from the network, the control section creates a digital certificate for the new data sending/receiving device by using the device identifier and sends the created digital certificate to the new data

sending/receiving device.

7. A digital certificate issuing method for issuing a digital certificate to a new data sending/receiving device when the new data sending/receiving device participates in a network formed by data sending/receiving devices each having a digital certificate that certifies authority to participate in the network, the method comprising the steps of:

judging, by a certain data sending/receiving device that is one of the data sending/receiving devices forming the network and is connected to the new data sending/receiving device, whether or not the new data sending/receiving device is a device having a communication means that can communicate in the network in accordance with device type information of the new data sending/receiving device received from the new data sending/receiving device; and

if the new data sending/receiving device is judged as being a device having a communication means that can communicate in the network, creating a digital certificate for the new data sending/receiving device by using a device identifier specific to the new data sending/receiving device received from the new data sending/receiving device and sending the created digital certificate to the new data sending/receiving device, by the certain data sending/receiving device.

8. The digital certificate issuing method according to claim 7, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network, if the new data sending/receiving device already has a digital certificate,

a new digital certificate is not issued.

9. The digital certificate issuing method according to claim 7, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network and the new data sending/receiving device already has a digital certificate, if the digital certificate that is already held in the new data sending/receiving device is for another network different from the network, the creating of a digital certificate for the new data sending/receiving device by using the device identifier and the sending of the created digital certificate to the new data sending/receiving device are performed.

10. The digital certificate issuing method according to claim 7, wherein the new data sending/receiving device verifies validity of the received digital certificate,

if it is confirmed that the validity exists, the new data sending/receiving device notifies the data sending/receiving device which has issued the digital certificate that the digital certificate has been accepted, and

if it is not confirmed that the validity exists, the new data sending/receiving device requests the data sending/receiving device which has issued the digital certificate to issue a digital certificate again.

11. A digital certificate issuing method for issuing a digital certificate to a new data sending/receiving device when the new data sending/receiving device participates in a network formed by data sending/receiving devices each having a digital certificate that certifies authority to participate in the network, the method comprising the

steps of:

judging, by one of the data sending/receiving devices forming the network, whether or not the new data sending/receiving device is a device having a communication means that can communicate in the network in accordance with device type information of the new data sending/receiving device received via a data sending/receiving device, to which the new data sending/receiving device is connected, from the new data sending/receiving device; and

if the one of the data sending/receiving devices forming the network, which is other than the data sending/receiving device to which the new data sending/receiving device is connected, judges that the new data sending/receiving device is judged as being a device having a communication means that can communicate in the network,

creating a digital certificate for the new data sending/receiving device by using a device identifier specific to the new data sending/receiving device received via the data sending/receiving device, to which the new data sending/receiving device is connected, from the new data sending/receiving device and sending the created digital certificate via the data sending/receiving device, to which the new data sending/receiving device is connected, to the new data sending/receiving device, by the one of the data sending/receiving devices.

12. The digital certificate issuing method according to claim 11, wherein even when the new data sending/receiving device is judged as being a device having a communication means which can participate in the network, if the new data sending/receiving device already has a digital certificate, a new digital certificate is not issued.

13. The digital certificate issuing method according to claim 11, wherein even when the new data sending/receiving device is judged as being the device having the communication means which can participate in the network and the new data sending/receiving device already has a digital certificate, if the digital certificate that is already held in the new data sending/receiving device is for another network different from the network, the creating of a digital certificate for the new data sending/receiving device by using the device identifier and the sending of the created digital certificate to the new data sending/receiving device are performed.

14. The digital certificate issuing method according to claim 11, wherein the new data sending/receiving device verifies validity of the received digital certificate, if it is confirmed that the validity exists, the new data sending/receiving device notifies the data sending/receiving device which has issued the digital certificate that the digital certificate has been accepted, and

if it is not confirmed that the validity exists, the new data sending/receiving device requests the data sending/receiving device which has issued the digital certificate to issue a digital certificate again.